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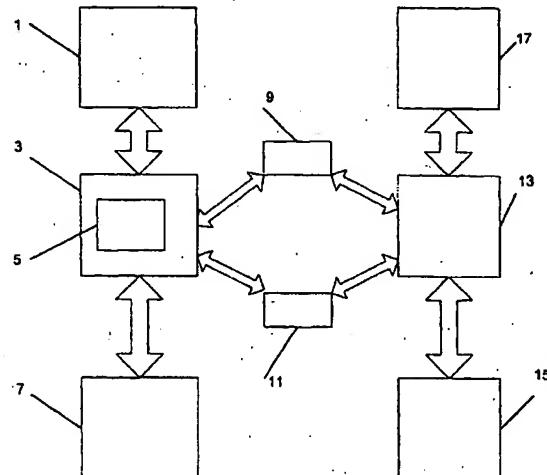
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(54) Title: METHODS AND SYSTEMS ENABLING COMMUNICATION IN ANY OF MULTIPLE COMMUNICATIONS FORMATS



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(57) Abstract: A system and a method are proposed which enable a first user ("sender") to communicate in multiple communication formats, such as voice calls, faxes, voice mail, fax mail, email, messaging, and instant messaging, with a second user ("receiver") identified by a single user identifier, such as a telephone number or conventional email address. A provider associated with the server identifies the format (automatically or according to an indication by the sender), optionally changes it, and transmits the message appropriately, for example as a real time connection or as a non-real time communications. Services that were earlier available for voice telephony, such as directory services, are enabled for other communication formats. Thus, the invention allows a user to subscribe to a telephone service and use the telephone number for other non-real-time communications applications.

Methods and Systems enabling communication in any of multiple  
communications formats

Field of the Invention

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The present invention relates to improvements in unified messaging services ("UMS"), which permit messages to be transmitted in any of multiple communications formats. Such formats may include voice telephony, fax, fax mail, emails, voice mail, instant messaging, SMS messaging etc.

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Background of the invention

The human need to communicate has grown at a tremendous rate in the recent times. Some of the main systems are:

15

1. **Fixed Line Telephone:** Fixed line telephones (sometimes called the Plain Old Telephone System, "POTS") are used primarily for voice communication. Most voice communication enabled by the POTS is real-time. People may also use an answering machine to record messages on an incoming call in 20 their absence. In recent times, PSTN (public switched telephone network) has also been used for accessing data networks such as the Internet. Access to services offered by POTS requires one to have a phone number that uniquely identifies the user and a telephone. Phone numbers are most widely used, exchanged and publicized as a communication tool to offer and access 25 a range of services. One is required to sign up with a POTS service provider to get a phone number, and the associated services.

2. **Cellular Telephone:** Cellular or mobile phones provide freedom to users in the sense that they can communicate from wherever they are. The system 30 is based on an Advanced Intelligent Network (AIN). These phones are used

for voice telephony as well as text messaging. Most voice communication enabled by the mobile phone is real-time. The mobile service providers do provide voice answering services to their subscribers. Access to services offered by wireless service providers requires one to have a mobile phone number that uniquely identifies the user and a mobile phone/terminal. Mobile phone numbers are widely used, exchanged and publicized as a communication tool to offer and access a range of services. One is required to sign up with a wireless service provider to get a mobile phone number, and the associated services.

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3. **Facsimile:** A fax is communicated by the sender to the recipient using the regular phone line by using fax machines or their equivalent (a personal computer, for instance). Faxes when sent from sender's fax machine to recipient's fax machine are real-time. Access to fax services requires one to have a phone number.

15

4. **Email:** This is basically an electronic way to exchange digital information between two parties. Emails can be text, voice, audio, fax, video, multi-media, or any combination of these and other things. They can also contain attachments. For a person to communicate via email, she is required to have an email address that establishes an identity for the data network such as the Internet. All email addresses are of the form email\_ID@domain\_name.com. One is required to have the precise email address of the recipient in order to send an email. It further requires that the person using email have access to a computer and to a data network such as the Internet. In recent times, email has also been used to provide voice-mail and fax-mail services. Further developments have taken place whereby it is possible to access email service via the phone also. Email is a non-real-time method to communicate.

5. **Voice-mail and Fax-mail:** The terms voice-mail and fax-mail are used in the context of processing voice and fax using computers. Digital files are created for voice and fax that when processed using a computer will output the corresponding original voice and fax, respectively. The main advantage of  
5 voice-mail and fax-mail is that they can be sent as attachments in an email. Voice-mail and fax-mail are non-real-time methods to communicate.

6. **SMS and Wireless Messaging:** SMS (short messaging service) was first made available to GSM mobile phone users by the wireless service providers.  
10 It makes it possible to send/receive short text messages between subscribers to mobile service. The length of the message is restricted to a maximum that depends on the language used. Wireless/Mobile text messaging is also available on mobile systems other than the GSM. There are plenty of wireless networks and wireless service providers that support 2 way  
15 exchange of alphanumeric information. This type of messaging is non-real-time even though the time lapse between the time of sending and receiving is expected to be relatively short. Access to SMS and wireless messaging is also done via the mobile phone number or a similar number (pager number, for instance). Though the life span of SMS and wireless messaging is  
20 relatively short, their popularity and growth have surpassed all expectations.

7. **Instant Messaging:** Instant messaging (IM) has become quite a popular way to communicate. IM is mostly based on PC (in general the term PC also includes Personal Digital Assistants (PDAs), handheld computers and other  
25 such computing devices) and requires access to a data network such as the Internet. Both the sender and the recipient are required to have some identifier (email address, icq™ number, for instance) for the other in order to exchange information. Some recent advances in IM have led to IM being made available to mobile subscribers via the SMS or similar services, and to

voice based IM for fixed line phones. In this document, we generally do not refer to IM as an example of a real-time format.

Recently wireless service providers have started providing facility to  
5 send/receive emails to their subscribers where the email address is of the form mobile ph no@operator.com. This requires that the sender not only know the mobile phone number, but also the operator name for the wireless service. It is also limited in its functionality as it is available only for mobile phones. For instance, such a service is provided by Singtel in Singapore.

10

Some recent activity deals with sending emails to a person when the sender knows only the phone number of the recipient (not his email address). It consists in creation of an email box for the recipient having email address phone number@winbox.com by an email sent at the said email address by  
15 the sender. The recipient is notified of the email sent by the sender and the account name and password to access it by the system (via SMS for instance). The recipient retrieves the email by using the Internet. There are several drawbacks for this method. One, it requires that the phone number of the recipient be known to the sender of email. The method does not work if  
20 the sender knows only the name of the recipient. Two, the sender may not know the existence of such a service. Three, it requires a PC based access to the Internet in order to retrieve the email. Four, the recipient may be very sceptical of a notification that asks her to log on to a web site and retrieve the email. It could result in somebody sending viruses etc. Five, there is no way  
25 that the sender or the recipient of the email be charged for using such a service. Six, it inconveniences the sender and the receiver as it leads to the creation of one more email address that one has to monitor for emails. There is no way to provide unified messaging services ("UMS" – a term defined below) using such a system and a method. Seven, it does not provide for the  
30 use of additional features or messaging services associated with the phone

numbers. Such a service is based on a patent by Winbox.com: WO 01/10089 "A Method and System for Electronic Messaging."

Some telephone companies (TelCos) have started offering SMS services to  
5 the fixed line phones. This is accomplished by having the system use a text-  
to-speech converter to read the SMS to the recipient over her fixed line  
phone. No other management functionality for the SMSs sent to the recipient  
at her fixed line phone is provided. Also it has not been possible to send an  
SMS from a fixed line phone to a mobile phone. For instance, Deutsche  
10 Telecom provides such a service to its subscribers. This was recently  
reported in [www.wirelessdevnet.com/news/2001/218/news3.html](http://www.wirelessdevnet.com/news/2001/218/news3.html).

IM using fixed line phones has recently been described. It requires the user  
to use her voice to access IM services. The method is very cumbersome  
15 when it comes to using text based IM, the most popular form of IM at this  
time. Also the system requires that the person using the IM service know the  
various addresses for other parties. There is no way to determine the  
address information required for the IM unless the other party provides it to  
the user. Finally, it is not possible to invite someone for an IM session. It  
20 establishes a method to do instant messaging for the case when only the  
person initiating the instant messaging is using the phone. The recipient has  
to be available on a data network. The system has to maintain the presence  
of the user on the data network (such as the Internet) for the duration of time  
that the user is available for instant messaging over the phone. This is rather  
25 tedious and limiting. For instance, this would imply that the service is not  
available to the user if she were to travel to another country. Such a service  
is based on the patent WO 01/35615 – Telephone Based Access to Instant  
Messaging.

Unified Messaging Services (UMS) have been proposed by several companies, for instance J2, T2mail, officedomain.com, and so on. UMS refers to systems which unify two or more of email, voice mail and fax services in a single mailbox accessible via devices such as computers through a client or

5 Web-browser, personal digital assistants ("PDA"), or telephones.

J2 requires that the recipient register with J2 and get a phone number for receiving faxes and voice mail. This recipient now publicizes this number. A sender needs to know this number in order to send faxes and voice mail to

10 the recipient. The number does not work for voice calls. Therefore, it requires that a recipient now have two numbers, one for voice calls, and second for fax and voice mail. It may also require that the sender have to make a long distance or international call in order to send faxes and voice mail. It further provides for no facility for sending emails. There is no way for

15 the person having the J2 account to charge the sender a fee for the voice mail or fax mail. Also if the J2 company were to discontinue its operations, the limited capability provided will also cease to exist and the customers using this service will have to inform all their senders of the new number for sending fax and voice mail. The services offered by J2 are based on the patent

20 US6208638 – Method and Apparatus for Transmission and Retrieval of Facsimile and Audio Messages over a Circuit or Packet Switched Network.

For the T2mail service, the recipient is required to register and get a T2mail account number and a password. She (or he) then needs to inform the sender of her T2mail account number and the email address for the said account, and the T2mail phone number to call to access the account for sending voice mail, and faxes. The recipient can access her faxes, voice mails, and emails by accessing her T2mail account either by phone or the Internet. Therefore, it requires that a recipient now have four pieces of information, one a phone

25 number for voice calls, two an account number for fax and voice mail, three

an email address, four a phone number to call to access T2mail account. A sender needs to know the first three pieces of the information about the recipient and also a T2mail phone number to call for sending faxes and voice mail to the recipient. It may also require that the sender have to make a long  
5 distance or international call in order to send faxes and voice mail. There is no way for the person having the T2mail account to charge the sender a fee for the voice mail or fax mail. Also if the T2mail company were to discontinue its operations, the limited capability provided will also cease to exist and the customers using this service will have to inform all their senders of the new  
10 numbers and email address for sending email, fax and voice mail.

Officedomain.com gives an 800 number which may be used to forward all phone/fax calls which are either unanswered or which come while the number is busy. An Email address is also given that is used to store incoming  
15 fax/phone messages and to forward all email messages that come to your existing email address(es). The method used by Officedomain.com suffers from all the drawbacks that the J2 and T2mail methods have.

There has been some recognition of the wide use of the phone numbers and  
20 efforts have been made to use them in the Internet world. This has led to enum based products and services proposed by the International Telecommunications Union (ITU) and Internet Engineering Task Force (IETF). However, the use of phone numbers for simplifying communications products and services has not received any attention by the IETF. Please refer to  
25 [www.ngi.org/enum/pub/DRAFT-SHOCKEY-enum-faq-01.TXT](http://www.ngi.org/enum/pub/DRAFT-SHOCKEY-enum-faq-01.TXT) for more information about enum.

To summarise, there are numerous problems with the known communications services described above. One, they require one to remember several pieces  
30 of information about a person and use them appropriately in order to send

different types of communications. Similarly, the user is required to access several different sources of communications' services to access all communications for the user. Several accounts have to be maintained.

5 It is clear that the use and availability of telephone is much more widespread globally than any other means of communication. Many products and services that have existed in the telephone world (directory assistance, profiling and 900 service, for instance) have no such equivalents in the email world. Also accessing email requires one to have access to the Internet. This  
10 can be expensive as it requires one to use a PC in many instances. It has not been possible to institute a fee structure for the non-voice-call communication' services provided to the consumer. In a similar vein, it is not possible for someone to access a web site of a person on the Internet without knowing the exact URL (uniform resource locator) of the web site.

15 It is desirable to propose a system and a method that could make all communications (voice call, fax call, email, voice mail, fax mail, messaging, instant messaging, URL) possible with only the phone number used as the address for the sender and/or the receiver of the communications. This would  
20 simplify communications, enable new and novel products and services some of which as included in this invention, and make them far more widely available and used by the consumers.

#### Summary of the Invention

25 The present invention aims to provide new and improved telecommunication methods and devices.

In general terms, the present invention proposes that users are able to identify  
30 other users using a single user identifier code, and to send messages to the

identified other user in one of multiple formats (i.e. one of a "set" of formats). Thus, the user identifier code is not limited to communication in any one format. For that reason, it may be referred to as a "universal communication number" (UCN). Preferably, the set of formats includes at least one real time  
5 communication format (such as voice telephony).

Specifically, in a first expression the invention provides a communication method comprising the steps of:

- (i) receiving a message from a first user in a format which is one of a  
10 predetermined set of communication formats;
- (ii) receiving a user identifier code from the first user, the user identifier code being independent of the message format and identifying a second user;
- (iii) identifying the format of the message; and
- (iv) transmitting the message to the second user across a  
15 communications network according to the format of the message.

In a second aspect, the invention provides a communication method comprising the steps of:

- (i) receiving a message from a first user in a format which is one of a  
20 predetermined set of communication formats, the set of formats including at least one real-time communication format;
- (ii) receiving a user identifier code from the first user, the user identifier code being independent of the message format and identifying a second user;
- (iii) identifying the format of the message; and
- (iv) transmitting the message to the second user across a  
25 communications network.

Note that the format of the message can be identified based on a specific format indication signal received from the first user. Alternatively, it may be deduced automatically, such as from the message itself.

- 5 In a preferred embodiment, the user identifier code is a telephone number (either a fixed line or a mobile phone number), i.e. a code number issued by a voice communication service provider associated with the user. Alternatively, it is possible to use other numbers and other identifiers (social security numbers in USA, automobile license number, visa card number, icq™ number, pager number, for instance) also as the user identifier code.
- 10 Alternatively, it is possible to use any variation of the phone number (e.g. listing the number from right to left, adding/deleting further characters to the phone number etc) as the user identifier code.
- 15 Preferably, the user identifier code is the only number that an entity needs to access all electronic communications services and products. In other words,
  - The phone number of an entity is same as its user identifier code.
  - The email address of an entity is same as its user identifier code.
- 20 The mobile phone number of an entity is same as its user identifier code.
  - The pager number of an entity is same as its user identifier code.
  - The fax number of an entity is same as its user identifier code.
  - The voice mail address of an entity is same as its user identifier code.
  - The fax mail address of an entity is same as its user identifier code.
- 25 The SMS number of an entity is same as its user identifier code.
  - The messaging address (number) of an entity is same as its user identifier code.
  - The IM address (number) of an entity is same as its user identifier code.

In the case of emails, it should be noted that an entity may have other email addresses in addition to the user identifier code. Such email addresses (termed conventional email addresses hereafter) and their use are well known to those skilled in the art.

5

Conventionally, phone numbers are assigned to an entity (persons, businesses etc) when it registers itself with a TelCo. Preferably, the system and the method of this invention make it possible for an entity to get a user identifier code as and when a phone number is assigned to it. All existing 10 phone numbers instantly have a corresponding user identifier code.

From another point of view, the invention provides communication service providers (i.e. apparatus) for use in the method of the invention. Normally, there are two such providers: a first provider associated with the first user 15 (here called a "sender provider"), and a second provider associated with the second user (here called a "receiver provider"). Each of these providers should be capable of handling messages in any of the set of formats. For that reason we refer to them here as "Universal Communications Providers" (UCP).

20

Specifically, corresponding to the first aspect, the present invention provides a communication service provider comprising:

a data input channel for receiving messages generated by a first user in a format which is one of a predetermined set of communication formats;

25 a data output channel for transmitting messages;

a processor arranged:

(i) to recognise a user identifier code generated by the first user and identifying a second user;

- (ii) to identify the format of a message received from the first user, the format not being indicated by the user identifier code; and
  - (iii) to control the data output channel to transmit the message to the second user according to the identified message format.

5

Also, corresponding to the second aspect, the invention provides a communication service provider comprising:

- a data input channel for receiving messages generated by a first user in a format which is one of a predetermined set of communication formats,
- 10 said set of formats including at least one real-time communication format;
- a data output channel for transmitting messages;
- a processor arranged:
  - (i) to recognise a user identifier code generated by the first user and identifying a second user;
  - (ii) to identify the format of a message received from the first user, the format not being indicated by the user identifier code; and
    - (iii) to control the data output channel to transmit the message to the second user
- 20 In the case of the sender provider, the data input channel is directly accessed by the first user, and the data output channel leads to at least one communication network. Optionally, the processor may be able to control which of a plurality of communication networks the output channel transmits the message to. For example, this may depend on the format of the message
- 25 (e.g. real-time or not real-time).

In the case of the receiver provider, the data input channel is connected to at least one communication network, from which the receiver provider receives the message generated by the first user. The provider sends the data to the second user using the data output channel.

Note that, in practice, each of the channels of each kind of provider may be enabled for two-way communication, so that the UCPs can be used for two-way communication between the first and second users. Indeed, in practice

5 the sender provider and receiver provider may be of identical construction.

Optionally, the receiver provider may be operated by the TelCo which ascribed the user identifier code to the second user. Alternatively or additionally, UCS may also be provided to the entity by ISPs, and/or agents of

10 the TelCos and ISPs, and/or third parties via the user identifier code. There can be multiple UCPs providing UCS to a customer. An UCP provides UCS to an entity via the entity's user identifier code.

15 In a further aspect, the invention provides a communication device for establishing communication with a receiver provider according to the invention, and adapted to receive from it a message in any of the set of formats. Optionally, the communication device may establish the communication using the user identifier code.

20 Brief description of the figure

A non-limiting example of the invention will now be described in detail for the sake of example only with reference to the accompanying figure, Fig. 1, which shows an embodiment of a communications system according to the  
25 invention.

Detailed Description of the embodiment

Referring to Fig. 1, the present invention enables communication between a  
30 first user 1 and a second user 17. Each user is associated with at least one

UCP. For simplicity, the first user 1 is shown associated with only one UCP 3 (the sender provider), and the second user 17 is shown associated with only one UCP 13.

- 5      The UCP 3 includes a processor 5 which determines which of a plurality of communication networks (for simplicity only two such networks 9, 11 are shown) are used to send a message to the UCP 13. For example, the network 9 may be an expensive network which is suitable for real-time communication, while the network 11 may be a cheaper network suitable for transmitting  
10     messages which are not to be received by the second user 17 in real time.

Furthermore, as described below, the processor 5 may be arranged to access a database 7. The UCP 13 correspondingly accesses the database 15.

- 15     Optionally, the processor 5 may be programmed (e.g. using existing technology which will be known to an expert) to determine the format of a message received from the first user 1.

We now describe various scenarios in which the communications system  
20     shown in Fig. 1 can be used.

**Email.** There are three aspects to providing for email services: sender 1, the network, and the recipient 17. The sender 1 composes an email and sends it to the UCP 3 to be delivered to recipient 17 over the network. The email may  
25     be text, voice and/or multi-media. The sender 1 uses the phone, PC, or the Internet to access the email services of its UCP 3. If the user 3 cares to compose the message using his voice, there are programs available to convert voice to text. Additionally, the sender may use other techniques including predefined messages, coded messages, keypads, TTY (teletype  
30     devices), speech-to-text converters, and live operators to enter text

information using the phone. It is also possible to have other devices, such as the one described below, designed specially for the purpose of entering information, including text, via the phone. The sender 1 can use any of these to compose the email using the phone. Use of a PC to compose and send an

5 email are known to those skilled in the art. In a preferred embodiment, the sender 1 can access the services of its UCP 3 for sending a communication to the recipient 17 by dialling the access code of the UCP, the account information, and a password that identifies the sender 1 to the UCP 3 for the desired communication service. The account information and/or the

10 password may be optional if alternate means exist (for instance caller-ID) to identify the sender 1. The sender 1 can use either the user identifier code or the conventional email address of the recipient 17. Whichever of the two is used, it is communicated to the UCP 3 of the sender 1. The UCP 3 of the sender 1 needs to resolve either the user identifier code or the conventional

15 email address of the recipient 17 to decode the way the email needs to be routed. Such methods already exist in the telecommunications/Internet world and are used to establish calls over the network (PSTN, AIN, Data network, Internet, etc).

20 In an alternate embodiment, the sender 1 can access the services of its UCP 3 for sending a communication to the recipient by using the UCP's website.

The UCP 3 of the sender 1 will now route the email to the UCP 13 of the recipient 17 over the network that can be one or more or a mix of the PSTN,

25 AIN, circuit switched network, packet switched network, satellite network, data network, Internet, or any other suitable network. The UCP 13 of the recipient 17 delivers the email to the recipient 17. Based on the profile of the recipient 17, the UCP 13 of the recipient 17 can either push or pull the email to her. The recipient 17 can access her email by using any of communication device

30 such as a phone, TTY or a TTY compatible device, mobile phone, PC, or a

"Universal Communication Device " (UCD) according to the invention (discussed below).

**Voice Mail and Fax Mail.** There are three aspects to providing these services: sender 1, the network, and the recipient 17. The sender 1 composes a voice mail or a fax mail and sends it to the UCP 3 for delivery to the recipient 17 over the network. The sender 1 uses a phone, fax machine, PC, a device according to the invention (discussed below), or equivalent devices to access the voice or fax mail services of its UCP 3. The sender 1 uses the user identifier code or the conventional email address of the recipient 17.

The method to access the services of the UCP for voice mail and fax mail is similar to the method for accessing the services of the UCP for email as described above.

The UCP 3 of the sender 1 needs to resolve the user identifier code or the conventional email address of the recipient 17 to decode the way the voice mail or fax mail needs to be routed. Such methods already exist in the telecommunications/Internet world. The UCP 3 of the sender 1 will now route the voice mail or fax mail to the UCP 13 of the recipient over the network that can be one or more or a mix of the PSTN, AIN, circuit switched network, satellite network, packet switched network, data network, Internet, or any other suitable network. The UCP 13 of the recipient 17 delivers the voice mail or fax mail to the recipient 17. Based on the profile of the recipient, the voice mail or fax mail can either be pushed to her by the UCP 13 or pulled by her. Voice mail or fax mail can also be converted to emails with attachments by the UCP 13 of the recipient 17. It is also possible for the sender 1 and/or her UCP 3 to convert voice mail or fax mail to emails with attachments and then send it as email or vice versa. The recipient 17 can access her voice mail or

fax mail by using any device such as a phone, fax machine, mobile phone, PC, a device according to the invention (discussed below), and so on.

**Instant Messaging.** It is now possible to access IM with only the knowledge  
5 of the user identifier code of the parties concerned. It is also possible to use  
the user identifier code with other identifiers (such as the icq™ number,  
conventional email address, etc.) to access IM in all environments. It is  
possible to use a phone, PC, a device according to the invention (discussed  
below), or other text or voice based devices to enter, send, receive and view  
10 messages. In the IM of today it is not possible to invite someone for an IM  
session unless they are on-line. In user identifier code based IM as described  
in the invention here, one may send an invitation to desired party or parties for  
an IM session. This aspect of the invention can also be used to invite the  
recipient for a conventional IM session if either the sender or the sender UCP  
15 knows the user identifier code of the recipient. This invitation can also be  
extended by the sender UCP without the sender being aware of the user  
identifier code of the recipient thus protecting privacy of the recipient. The  
sender UCP may convert TTY messages received from the sender in TTY  
format to a format suitable for transmission over the network. The receiver  
20 UCP may convert the messages received from the network into a TTY format  
for delivery to the receiver.

**Messaging and SMS.** In this paragraph, we call messaging and SMS simply  
25 "messaging". There are three aspects to providing for messaging services:  
sender 1, the network, and the recipient 17. The sender 1 composes a  
message and sends it to the UCP for delivery to the recipient 17 over the  
network. The sender 1 uses the phone, PC, or the Internet to access the  
messaging services of its UCP 3. There are programs available to convert  
30 voice to text. Additionally, the sender 1 may use other techniques including

predefined messages, coded messages, keypads, TTY (teletype devices), speech-to-text converters, and live operators to enter text information using the phone. It is also possible to have other devices, such as UCD device according to the present invention (discussed below), designed specially for

5 the purpose of entering text via the phone. The sender 1 can use any of these to compose the message using the phone. Use of a PC to compose and send a message is known to those skilled in the art. The sender 1 uses the user identifier code of the recipient 17. The UCP 3 of the sender 1 needs to resolve the user identifier code of the recipient 17 to decode the way the

10 message needs to be routed. Such methods already exist in the telecommunications/Internet world and are used to establish calls over the network (PSTN, AIN, Data network, Internet, etc). The UCP 3 of the sender 1 will now route this email to the UCP of the recipient over the network that can be one or more or a mix of the PSTN, AIN, circuit switched network, satellite

15 network, packet switched network, data network, Internet, or any other suitable network. The UCP 13 of the recipient 17 delivers the message to the recipient 17. Based on the profile of the recipient 17, the UCP 13 of the recipient 17 can either push or pull the message to her. The recipient 17 can access her message by using devices such as the phone, mobile phone, TTY

20 or a TTY compatible device, PC, and so on. It is also possible for the UCP 13 of the recipient to use text-to-speech converters and play the message to the recipient in audio form. This can also be initiated by the user 17.

In many messaging systems, messaging is used to generate alerts for emails.

25 The UCP 13 of an entity 17 can also provide such a service to the entity by sending alerts to the entity in a way that it desires.

The UCP 13 may also convert a communication to a more appropriate/convenient format. For instance, it may convert email to fax,

30 voice mail to fax (via voice-to-text converters), fax to email (via optical

character recognition (OCR) programs) and/or to voice mail. This conversion may be done as per user-defined parameters/preferences. This conversion may also be performed to make the communications more appropriate for TTY devices.

5

The UCPs 3, 13 may respectively maintain databases 7, 15 (alternatively they may be maintained by agents of the UCPs or a third party) to find out which of the communications services from the UCS the entities 1, 17 are subscribed to. This information can be used to send communications to an entity 10 appropriately. An entity may also wish to keep its user identifier code unlisted and therefore private.

In an alternate embodiment, user identifier code may be any other identifier that uniquely identifies the user, for instance, the Visa card number. The 15 sender UCP may resolve such identifier codes through a central "Identifier Code Resolver Server (ICSR)". The Visa card number uniquely identifies the intended recipient of the communication. The ICSR may work with the Visa Company to identify the intended recipient and deliver the communication to her. In another embodiment, the sender UCP may itself be the ICSR. Other 20 instances of such user identifier codes are: Bank account number, FedEx<sup>TM</sup> account number, Airline ticket number, and so on. Such user identifier codes may also be used in the conventional Internet (email, IM, etc) world. For instance, MSN<sup>TM</sup> may provide this service.

25 This embodiment enables many other advantageous features. Some of these are described below.

1. **New Pricing Schemes for UCS.** Since all communications is taking place via a single account established by an entity 1, 17 with its UCP 3, 13, it is now 30 possible with the system and the method described here to introduce various

pricing models for the UCS. Thus the sender 1 and/or the recipient 17 may be charged/paid for sending/receiving an email by the respective UCP 3, 13. For instance, the UCP of an entity may put a premium charge for an email sent to a 900 phone number based user identifier code. Similarly, the 5 participants for an IM session may be charged/paid as per a pricing arrangement that they have with their UCP. The sender/receiver may also be charged for a communication sent from Internet and/or received via the Internet. The internet site that provides a user identifier code based UCS may enter into an agreement (that includes revenue sharing) with the UCP 10 providing UCS to an entity to charge for the UCS provided through the site.

2. **Classifieds.** These days most classified advertisements carry the phone number of the advertiser. This requires that the advertiser be available on the phone to take the call or have a voice mail service. Many callers may not like 15 to leave their contact information on the voice mail. This invention enables one to advertise that the persons may use any of the techniques in the UCS to respond as the number advertised becomes a user identifier code.

3. **Directory Service.** One major problem solved by the system and the 20 method described here is the problem of finding conventional email addresses. Phone numbers are widely available via phone directories. With the preferred embodiment, the phone directory also becomes a user identifier code directory. Thus one may look up the desired user identifier code, have yellow pages, use phone inquiry services, use internet to get the user 25 identifier code, and so on. User identifier codes may also be identified by some appropriate symbol/code when published in the directory to indicate the services available at that user identifier code.

4. **Intelligent messaging.** Services such as call forwarding, intelligent and 30 location sensitive phone number dialing are known in the TelCo world. With

this invention, communications can also be made intelligent where the communication sent to a user identifier code could be received at different places depending on the profile and preferences of the recipient. Similarly, sending of the communications could also be done in an intelligent manner.

5 The UCP 3 of the receiver 17 may send the communication to a different user identifier code depending on the receiver's profile and preferences.

5. **Limited Service user identifier code.** Instead of having the entire set of communications services for each user identifier code, an entity may get a 10 limited service user identifier code for its use whereby only a subset of the communications services are available to her at the particular user identifier code. For instance, it may have a limited service user identifier code for receiving customer feedback. In another instance, an entity may have a limited service user identifier code for receiving faxes, fax mail, email, voice 15 mail, messaging only thereby excluding voice call service at the user identifier code.

6. **Direct Links.** Thus far UCS were provided by a UCP. It is also possible for the sender and the receiver to establish a direct link (private network, 20 wired or wireless, for instance) without a public switched network using a method similar to the methods as described here.

7. **Secure Email.** It is quite difficult to send secure email to an entity. The encryption keys are not easily available on the Internet. With the use of a 25 user identifier code for email by an entity, it is possible to publish the encryption keys for the user identifier code that have secure email facility. It could be done by the UCP of the entity or its agent or a third party. The keys may also be published on the Internet for the user identifier code that have this facility. The URL of the web-site containing the key could be one that is 30 easy to use. For example, if we call the user identifier code "UCN", then

instances of such URLs include www.encryption keys.com/UCN,  
www.encryption keys.UCN.com,  
www.encryption keys.company name.com/UCN,  
www.encryption keys.UCN.company name.com,

5   www\_UCN.com/encryption keys,                   www\_UCN.encryption keys.com,  
www\_UCN.company name.com/encryption keys,                   and  
www\_UCN.encryption keys.company name.com. Other instances are  
possible and are included in the scope and spirit of the invention.

10   **8. Other Related Systems.** As mentioned above the user identifier code is  
preferably a telephone number. However, the invention includes related  
systems such as the use of the user identifier code when expressed partially  
or completely in terms of the alphanumeric numbers using the ITU  
(International Telecommunications' Union) or some other convention. An  
15   example of a phone number expressed in alphanumeric form using the ITU  
convention is 1800CALLATT for 18002255288. Alternate embodiments for  
the user identifier code can be obtained by replacing the country code and/or  
the area code in the user identifier code by the corresponding names of the  
country and the city. Further the user identifier code could also be of the form  
20   PhoneNumber\_OtherCode. Other alternate embodiments for the system and  
the method of this invention can be having UCN@yahoo.com as conventional  
email address. This could also be used as a pointer to an already existing  
email account. If a person wishes to send email (communication) to someone  
whose phone number does not have the subscription for email  
25   (communication), she may send the email (communication) to  
UCN@very large email provider.com, where there could be a few email  
(communication) providers that classify as a very large email (communication)  
service provider. This will ensure delivery of email (communication) with a  
high probability.

UCN can also be used as an alias. For instance, a communication sent to UCN@yahoo.com can be delivered to an entity with some other conventional email address that the entity has with yahoo.com as long as it has provided to yahoo.com the same UCN as its alias.

5

The invention further includes embodiments of the user identifier code and conventional email addresses such as having UCN@company name.com for external communications and UCN internal@company name.com or just UCN\_internal for internal communications. This follows the same spirit that  
10 for many organizations one does not need to dial the entire phone number for internal communications within the organization.

**9. Enabling Communications.** In many instances only the phone number is collected (car mechanic, doctor, 911 emergency, school forms, courier services, etc). With the user identifier code providing communications capability to the phone number, the invention enables communications in other formats in all such situations. For instance, a car mechanic may send an email— “Car is ready” to the user identifier code. FedEx™ can use the user identifier code to communicate tracking and other information to its  
20 customers.

**10. Disaster Management.** There is no known method to reach via email all the people living in a geographical area. Such an email communication is required for disaster notification to population living in a certain geographical location(s). The present system and method include disaster management (flood warnings, hurricanes, etc) and notification via the user identifier code. The same system and a method may be used in other business applications such as email notification of a sale in a shopping mall to the local residents.

11. **Telemarketing, Profiling and Advertising.** Profiling of customers with their telephone numbers is done very extensively in the western world. This profiling is used to promote certain products and services to them. With this invention, the profiling done using the phone numbers can now be used as a 5 customer profile using the user identifier code. The invention now delivers a very powerful tool in the hands of promoters of products and services as it enables email-based --- marketing, advertising, and promotions – that employs profiling done in the telephone domain. As per The Economist, February 24 – March 2, 2001, Page 67-68, "Banner-ad blues", "Advertisers 10 have been willing to pay as much as a hundred times more for a well targeted online ad than for blanket coverage". "But targeting (On the internet) turns out to be easier to talk about than to do". However, targeting is as easy to do as it is to talk about in the telephone domain, and with this invention it is easy to do in the email domain.

15

12. **Interactive Services.** With the user identifier code, it is possible to have a simultaneous voice call as well as a data call. The user identifier code will do this and no further information is required. Thus during a voice call if a person wishes to send/receive an email, it is possible to do so.

20

13. **Other Environments.** The system and the method described in this invention are also applicable to many other environments where voice call facilities exist. Instances of such environments include direct communication links that bypass the public switched network, seat-to-seat calling in the 25 airplanes, and satellite phones used in calling to/from airplanes and ships. Now with this invention, email, voice-mail, fax-mail, messaging, and SMS are possible in all such environments.

For UCS from the airplane, the invention includes a computer-server on-board 30 the airplane that can collect all the communications from the passengers and

periodically pass it to the ground station via a phone link (satellite, cellular, and/or others). The passengers create email, fax mail, voice mail, IM, SMS using the already existing satellite phone system and the method of the invention described here. From the ground station, the messages are delivered to their respective destinations. The same computer-server enables seat-to-seat UCS; the user identifier code in this instance identifies the seat. For UCS to the airplane, the invention includes a computer-server on-board the airplane that can collect periodically all the communications from the ground station via a phone link (satellite, cellular, and/or others). From the on-board computer-server, the messages are pushed to the respective passengers using their on-board user identifier code. The on-board user identifier code of the passenger may be a satellite phone number and/or a seat identifier, and all communications sent to the passenger (whether to her regular user identifier code, conventional email address, or otherwise) may be forwarded to the on-board user identifier code. The passenger on-board may also pull all communications from the computer-server on the aircraft that may in turn pull communications from the ground station on passengers' demand.

The system and the method described here use the already existing phone infrastructure in the aircraft to enable access to UCS. The passengers are not required to have any specialized equipment. Further, it has the capability to push a communication to a passenger. This is in sharp contrast to the existing prior art in patent number WO00/14987 ("Communications System for Aircraft") that provides access to email via access to the Internet. Such a method requires specialized equipment on the airplane as well as extensive software on the computers. Such equipment can be expensive to build, service, and maintain. Further, the passengers can only pull their communications from the computer-server. There is no push mechanism from the computer-server to the passengers in their system.

Another major problem in the Internet world is that one needs to know the exact address (URL) of a web page in order to access it. We propose, as a solution to that problem, a user identifier code based URL. This will make the

5 access to the Internet much easier and simpler. For example, consider the Web URL = www.UCN.phone. It is possible that the user may enter only the UCN as the URL and the browser software will complete the URL automatically.

10 This web site can be assigned to the user identifier code account that the entity has with the UCP for its UCS. We call such a URL a unified URL (UURL). As a part of the above-preferred embodiment, we have invented a new top level domain name 'phone' (or something similar) that could be licensed to the entities having the particular user identifier code. Thus all user

15 identifier code based web URLs and web sites could now be found immediately. Alternate embodiments of this UURL can also be www.UCN.yahoo.com, www.yahoo.com/UCN,  
www.yahoo.com/sg/UCN\_internal, or other such URLs that can be recalled trivially once the user identifier code of the entity is known. In another

20 embodiment, the user identifier code in these UURLs can also be replaced by the conventional email address.

As mentioned above, the present invention further proposes a communication device that enables access to UCS. It should be capable of interaction with the UCPs 3, 13 in any of the formats associated with the users. In fact, the blocks 1, 17 representing the users in Fig. 1 can alternatively be viewed as 5 respective devices according to this invention each of which is operated by a human user who is not shown in the figure.

Since a single device can communicate in all the communication formats, this results in a reduction of the equipment and associated costs required to 10 access the UCS. We call such a device a universal communications device (UCD). A UCD enables an entity to access UCS via its UCP. It has the following features and capabilities:

- Phone (regular and/or cordless and/or mobile and/or internet)
- 15 Information processing (text and/or graphics: entering, managing, sending, receiving, displaying, storing, editing etc)
- Fax machine and/or answering machine
- Messaging (email, messaging, SMS, IM)
- TTY compatible

20 A UCD may also have partial features and capabilities depending on the convenience of the consumer. Such a device may also be simulated on a PC or a mobile terminal with information processing capability.

25 We now consider in detail various communication paths present in Fig. 1.

1. Communication between the first user 1 and her UCP 3

As discussed above, the UCP 3 is capable of identifying the format of the message from the user 1. This can be performed automatically, or based on a

specific signal generated by the user 1. We now give an example of the latter possibility.

In this example, the sender 1 can access the services of its UCP 3 for sending

5 a communication by dialing the access code of the UCP 3, the account information, and a password that identifies the sender 1 to the UCP 3 for the desired communication service. For instance, 001 is dialed in USA as the access code for making an overseas voice call followed by the phone number of the called party. In the same way, 002 could be the access code to be

10 dialed for an email, 003 could be the access code for the voice-mail, and 004 could be the access code for the fax-mail, and 005 could be the access code for messaging. This further identifies the type of communication to the UCP 3.

15 UCP 3 may alternatively employ a single access code for all types of communications and use alternate means to detect the type of communication. Other types of access codes exist, for instance there are telcos in USA whose services are accessed by dialing 1010 followed by their specific codes. In Singapore, different access codes are used by different

20 telcos. Methods could be designed when the access code depends on the particular telco and the communications service. Also if the telcos detect the type of communications using other means, then one access code may be used for accessing a particular telco for all communications.

25 Note that transmission by the sender 1 to the UCP 3 of her account information and/or the password may be optional if alternate means exist (for instance caller-ID) to identify the sender 1.

Many telcos, for instance AT&T, provide a calling card to their customers that

30 enables them to make long distance voice calls when traveling. This is done

by first calling the access code for that particular telco from the country the customer is currently located in, entering the account information (number and password), followed by the desired phone number. This service may also be used when a call is charged to a credit card. This facility may also be used by  
5 a sender 1 to access her UCP 3 during travel. She will once again dial the access code for her UCP 3 from the country she is currently located in, and then her account information (number and password). The UCP 3 upon verification of the account information of the sender, provides her with communications services.

10 Followed by the access code, account information, and the password, the sender 1 will send the communication intended for the recipient to her UCP 3. This communication contains the address of the recipient. The address of the recipient can either be the UCN or the conventional email address of the  
15 recipient. Whichever of the two is used, it is communicated to the UCP of the sender 1.

In an alternate embodiment, the sender 1 can access the services of its UCP 3 for sending a communication to the recipient 17 by using the UCP 3's  
20 website.

The sender UCP can maintain the buddy list or the sender may maintain it at her end. In either case, the sender UCP will inform the sender of the presence or the absence of the person the sender desires to IM. The sender UCP will  
25 also maintain a presence for the sender on the Internet if so required.

## 2. Communications from UCP 3 to the UCP 13

Consider for example the case of email, voice-mail, fax-mail, IM, or  
30 messaging. The UCP 3 of the sender 1 needs to resolve the destination

address, which is either the UCN or the conventional email address of the recipient, to decode the way the communication needs to be routed.

5 If the destination address is a conventional email address, the communication is forwarded to the email account in the usual manner over the Internet. Such methods are commonplace in the Internet world.

If the destination address is a UCN, then the communication needs to be forwarded to the UCP of the recipient. Such methods already exist in the  
10 telecommunications/Internet world and are used to establish voice calls over the network (PSTN, AIN, Data network, Internet, etc). Using the same methods, the UCP 3 of the sender 1 will route the communication to the UCP 13 of the recipient 1 over the network that can be one or more or a mix of the PSTN, AIN, circuit switched network, packet switched network, satellite  
15 network, data network, Internet, or any other suitable network. The selection of the network may also depend on the priority and/or other parameters of the communication and the sender 1.

### 3. From UCP 13 to the Recipient 17

20 Consider again the case of email, voice-mail, fax-mail, IM, or messaging. The recipient 17 communicates with her UCP 13 or vice versa for the delivery of her communications. The recipient 17 may set her preferences for the delivery of communications with her UCP 13. These preferences are made  
25 known to the UCP 13 by entering them on the UCP's web-site, or by calling the UCP 13, or through some other means including writing and/or faxing. The communications to a recipient can either be pushed to her by the UCP 13 or she could pull them from her UCP 13 depending on her preferences.

Pushing: UCP 13 pushes the communications to the recipient 17 by dialing its UCN and delivering the communications to her. The UCP 13 may also call a UCN other than the UCN of the recipient 17 if so requested by her. The UCP 13 may also convert one form of communications to another, for 5 instance, email to fax. This conversion may either be on a case by case basis or dependent on recipient's profile. The emails, voice-mail, and messaging may be read by the UCP over the phone using text-to-speech converters. If the recipient has a device that can receive the communications, for instance a UCD or a PC or a fax machine, then the communications may be downloaded 10 to the device.

The recipient 17 may also be invited to a web-site where the UCP makes all communications available to the recipient. For access of communications using the web-site, the recipient must have an account number (which may or 15 may not be same as the UCN) and a password.

Pull: Recipient 17 pulls the communications from the UCP 13 by calling the access code of the UCP 13. This access code is a phone number that the UCP provides to the recipient for delivery of her communications. The UCP 20 first verifies the identity of the recipient. If the recipient 17 calls from her UCN registered with the UCP 13, then the UCP 13 may bypass the password verification. If the recipient calls from some other UCN then she is prompted to enter her account number and a password before she is allowed to access her communications. The UCP 13 may also convert one form of 25 communications to another, for instance, email to fax. This conversion may either be on a case-by-case basis or dependent on recipient's profile. The emails, voice-mail, and messaging may be read by the UCP 13 over the phone using text-to-speech converters. If the recipient 17 has a device that can receive the communications, for instance a UCD or a PC or a fax 30 machine, then the communications may be downloaded to the device.

The recipient may also visit a web-site where the UCP makes all communications available to the recipient. For access of communications using the web-site, the recipient must have an account number (same as the  
5 UCN) and a password.

In either of the two modes of communications' delivery, push or pull, the communications intended for a recipient are stored by her UCP 13. Various other services associated with the messaging accounts can also be made  
10 available to its users by the UCP 13. This includes encryption, return acknowledgment, reply, folders, etc.

The UCP 13 may also generate alerts for certain communications depending on the recipient's preferences, sender's request, and other system settings.  
15

Another advantage of this system is that an entity may send a document as an email to her own UCN, have it converted to a fax by the UCP and then get it delivered to herself. This can be helpful for printing of a document when the entity does not have access to a printer.  
20

The sender and/or the receiver of the communications can also schedule the delivery of the communications by indicating the time of delivery in the preferences to their UCP.

25 Many telcos, for instance AT&T, provide a calling card to their customers that enables them to make long distance voice calls when traveling. This is done by first calling the access code for that particular telco from the country the customer is currently located in, entering the account information (number and password), followed by the desired phone number. This service may also be  
30 used when a call is charged to a credit card. This facility may also be used by

a recipient to access her communications during travel. She will once again dial the access code for her UCP from the country she is currently located in, enter her account information (number and password), followed by her UCN.

The UCP upon verification of the account information of the recipient,

5 provides her with her communications. The recipient may once again manage her communications as per her preferences.

#### 4. Group Communications

10 This case is particularly relevant to the case of email, voice-mail, fax-mail, messaging. The sender 1 may form a group of multiple UCNs and/or conventional addresses and register it with the UCP 3. Such a group is identified by a group address, selected by either the sender 1 or the UCP 3.

15 Communications can be sent to all the addresses in the group by using the group address. Once a communication is received by the UCP 3, it creates communications for each of the addresses in the group and sends it to them. Alternately, the device used by the sender 1 can be made intelligent such that it replaces the group address by each one of the addresses in the group and

20 then sends each of those communications to the UCP 3.

#### 5. Entering UCN as email address in communications address field:

Conventional communications systems use the email address in the address field. The conventional communications systems when presented with the UCN in their address field should be able to recognize it as a UCN. This can be done by making the conventional communication system intelligent to detect the use of a UCN in the address field. Also, the UCN may be preceded by a code to indicate that the address that follows is a UCN. There may also

25 be two address fields in the conventional communications system, one for

30

conventional messaging address and the second for UCN.

Claims

1. A communication method comprising the steps of:
  - (i) receiving a message from a first user in a format which is one of a predetermined set of communication formats;
  - (ii) receiving a user identifier code from the first user, the user identifier code being independent of the message format and identifying a second user;
  - (iii) identifying the format of the message; and
  - (iv) transmitting the message to the second user across a communications network according to the format of the message.
2. A method according to claim 1 in which the set of formats includes at least one real-time communication format.
3. A communication method comprising the steps of:
  - (i) receiving a message from a first user in a format which is one of a predetermined set of communication formats, the set of formats including at least one real-time communication format;
  - (ii) receiving a user identifier code from the first user, the user identifier code being independent of the message format and identifying a second user;
  - (iii) identifying the format of the message; and
  - (iv) transmitting the message to the second user across a communications network.
4. A method according to any of claims 1 to 3 which further includes changing the format of the message, the message being transmitted to the second user in the changed format.
5. A method according to any preceding claim in which the set of formats includes at least one of the following formats:
  - real-time multi-media communication;

real-time voice communication; and  
real-time fax.

6. A method according to any of claim 5 in which the message is a  
5 component of a two-way real-time communication between the first and  
second users.
7. A method according to claim 6 further including during the two-way  
real-time communication receiving a second message from the first user in a  
10 different one of said formats, identifying the format of the second message,  
optionally changing it, and transmitting the second message to another user.
8. A method according to claim 7 in which the other user is the second  
user.  
15
9. A method according to claim 8 in which the format of the second  
message is not a real-time format.
10. A method according to any preceding claim in which the user identifier  
20 code is a telephone number.
11. A method according to any of claims 1 to 9 in which the user identifier  
code is a conventional email address.
- 25 12. A method according to any of claims 1 to 9 in which the user identifier  
code is associated with a financial account, such as being a credit card  
number.
13. A method according to any preceding claim in which the format is  
30 identified using a format indication signal received from the first user.

14. A method according to any of claims 1 to 12 in which the format is identified automatically by processing the message.
15. A method according to any preceding claim in which at least one communication format of said set of formats is a not a real-time communication format.
  - 5
16. A method according to claim 15 which the set of formats includes at least one of the following non-real-time formats:
  - 10 voice mail;
  - email;
  - fax mail;
  - messaging;
  - instant messaging; and
  - 15 SMS.
17. A method according to any preceding claim in which the steps (i) to (iv) are performed by a first service provider associated with the first user, and said transmission is to a second service provider associated with the second user.
  - 20
18. A method according to any preceding claim in which the communication network is one of a predetermined set of communication networks, and is selected based on the format of the message, and/or the user identifier code, and/or user preferences.
  - 25
19. A method according to any preceding claim in which at least one of the two service providers makes a financial charge or a financial payment to the respective user.

20. A method according to any preceding claim further including interrogating a database to obtain information relating to one of the users.
21. A method according to claim 20 in which the database is a searchable  
5 directory of users.
22. A method according to claim 20 in which the database lists a subset of  
the set of formats, said subset being associated with one of the users.
- 10 23. A method according to claim 22 in which the message is transmitted to  
service provider with an address generated based on the user identifier code.
- 15 24. A method according to claim 20 in which the database defines a group  
of second users, the method including sending the message to all the second  
users.
- 20 25. A method according to any preceding claim further including using a  
URL derived using the user identifier code to access an encryption key  
associated with the second user.
26. A method according to any preceding claim in which the message is sent to a plurality of second users.
- 25 27. A method according to claim 26 in which the message is a disaster  
warning.
28. A method according to claim 26 in which the message is advertising  
material.

29. A method according to any preceding claim in which the second user is associated with an Internet Website having a URL dependent upon said user identifier code.

5    30. A communication service provider comprising:  
      a data input channel for receiving messages generated by a first user in a format which is one of a predetermined set of communication formats;  
      a data output channel for transmitting messages;  
      a processor arranged:  
10      (i) to recognise a user identifier code generated by the first user and identifying a second user;  
                (ii) to identify the format of a message received from the first user, the format not being indicated by the user identifier code; and  
                (iii) to control the data output channel to transmit the message to the  
15      second user according to the identified message format.

31. A communication service provider comprising:  
      a data input channel for receiving messages generated by a first user in a format which is one of a predetermined set of communication formats,  
20      said set of formats including at least one real-time communication format;  
      a data output channel for transmitting messages;  
      a processor arranged:  
                (i) to recognise a user identifier code generated by the first user and identifying a second user;  
25      (ii) to identify the format of a message received from the first user, the format not being indicated by the user identifier code; and  
                (iii) to control the data output channel to transmit the message to the second user.

32. A provider according to claim 30 or 31 in which the data output channel leads to at least one communication network.
33. A provider according to claim 30 or 31 in which the data output channel  
5 can transmit the message under the control of the processor to any of multiple communications networks, the processor selecting which network the message is transmitted to based on the format of the message and/or either the user identifier code, and/or user preferences.
- 10 34. A provider according to claim 30 or 31 in which the data input channel is connected to at least one communication network, from which the receiver provider receives the message generated by the first user.
- 15 35. A provider according to any of claims 30 to 34 in which each of the channels is enabled for two-way communication.
36. A provider according to any of claims 30 to 36 adapted to interrogate a database based on the user identifier code to retrieve information associated with the second user.  
20
37. A provider according to any of claims 30 to 36 comprising means for identifying the format of the message from the content of the message.
- 25 38. A provider according to any of claims 30 to 37 enabled to convert the format of the message from a first format to a second format, such as from a text message to a voice message or vice versa.
39. A provider according to any of claims 30 to 38 which is mounted on a vehicle, such as an airplane.  
30

40. A communications device adapted to establish communication with a provider according to any of claims 30 to 39, and to send to or receive from it a message in any of said set of formats.

5 41. A communications device according to claim 40 which establishes communication with the server using a user identifier code associated with the user of the device.

42. A communication method comprising the steps of:

10 (i) receiving a message from a first user in a format which is one of a predetermined set of communication formats;

(ii) receiving a user identifier code from the first user, the user identifier code being independent of the message format and identifying a second user; and

15 (iii) transmitting the message to the second user across a communications network; wherein the second user is associated with an Internet Website having a URL dependent upon said user identifier code.

20 43. A communication method according to claim 29 or claim 42 in which said URL contains said user identifier code and a string indicative of the fact that the URL depends upon said user code.

44. A communication method according to claim 43 in which said URL is 25 said user identifier code and said string is a present as a suffix in said URL.

1/1

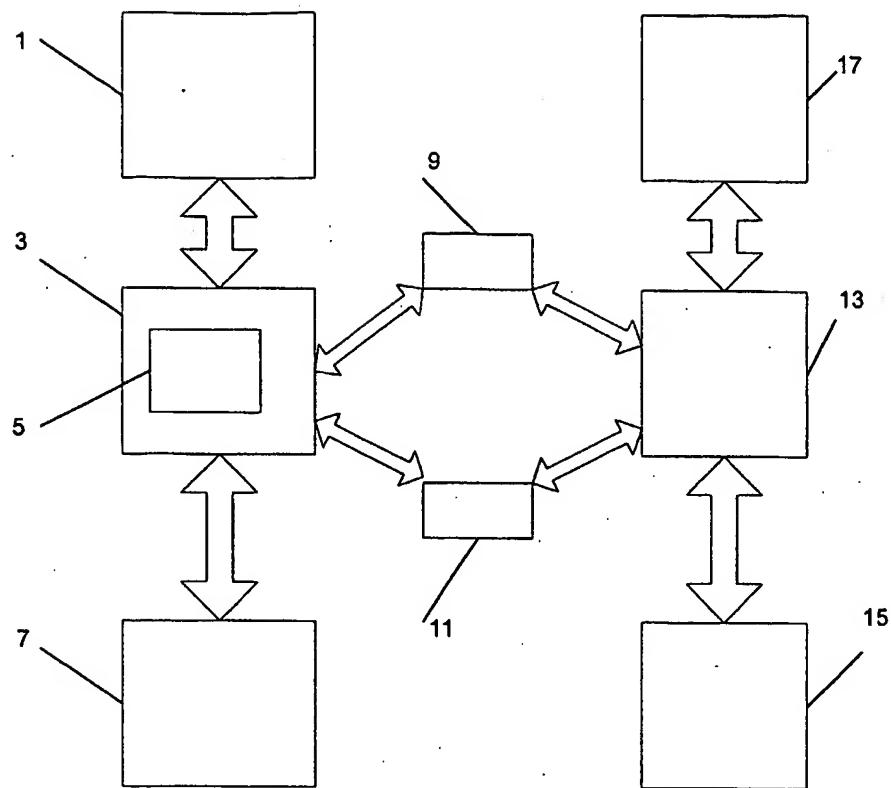


Fig. 1

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG 01/00236

## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: H04L 12/66, 12/54, 29/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ, EPOQUE, IEEEExplore

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|----------|---|-----------------------|
| X        | EP 0814443 A1 (SHARP) 29 December 1997 (29.12.97)<br><i>figs; abstract; page 1, line 53 - page 3, line 15; page 5, lines 3-37.</i>  | 1-44                  |
| X        | JP 2000-196660 A (RICOH) 14 July 2000 (14.07.00) (abstract).<br>[online] [retrieved on 15.5.2002]. Retrieved from: EPOQUE Database. | 1-44                  |
| A        | EP 1091532 A2 (MICROSOFT) 11 April 2001 (11.04.01)<br><i>abstract.</i>  | 1-44                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search  
**15 May 2002 (15.05.2002)**

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/SG 01/00236**

| Patent document cited<br>in search report | Publication<br>date | Patent family<br>member(s)                     | Publication<br>date                    |
|---|---------------------|--|--|
| EP A1 814443                              | 29-12-1997          | CN A 1173769<br>JP A2 10013935<br>US A 6078808 | 18-02-1998<br>16-01-1998<br>20-06-2000 |
| EP A2 1091532                             | 11-04-2001          | EP A2 1091536                                  | 11-04-2001                             |
| JP A2 00196660                            | 14-07-2000          | none   |  |

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